PREGNANCY RISK ASSESSMENT MONITORING SYSTEM

A survey for healthier babies in New Jersey

Survey Methods Summary for New Jersey PRAMS

PRAMS is a national effort, with a standard protocol designed by the Centers for Disease Control and Prevention (CDC) and implemented by individual states. This document describes how PRAMS is executed in New Jersey, including how the sample is drawn, the content and administration of questionnaires, and preliminary considerations for data analysis.

NJ-PRAMS is a joint project of the New Jersey Department of Health and Senior Services and the Centers for Disease Control and Prevention (CDC). Information from PRAMS is used to help plan better health programs for New Jersey mothers and infants—such as improving access to high quality prenatal care, reducing smoking, and encouraging breastfeeding.

Contact NJ-PRAMS

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Sample Interviewed

The *population of interest* for PRAMS is all women who are residents of New Jersey who deliver a live-born infant within New Jersey. The survey began covering births from July of 2002, and will continue indefinitely. The *sampling frame* used to identify and select new mothers each month is the state file of electronic birth certificates typically filed by the birth hospital within a week of delivery.

New Jersey residents who give birth out-of-state are excluded as a practical consideration—birth certificates are not available in a timely way. (In 2001 these accounted for about 4% of all births to New Jersey women.) Multiple gestations with more than three live infants are considered a special population and were removed from the frame before selection. In the case of twins or triplets, one infant is selected at random as the target for all child-related questions.

In order to accomplish planned analysis objectives, the sample is stratified by race, Hispanic origin and smoking status as reported on the birth certificate. Women who were black, Asian, Hispanic, or smoked during pregnancy were *oversampled*—i.e., they were selected in higher proportions than other women. The same sampling design was used in 2002 and 2003.

The sample is drawn each month using *stratified systematic sampling*: from each stratum, every k^{th} eligible mother from that month's list is selected, starting from a randomly drawn mother in the first k. The *sampling interval* k is determined separately for each stratum according to the desired sample size and an estimate of the total annual number of eligible mothers.

Table 1. NJ-PRAMS Sample Design, 2003

Stratum	Mothers eligible	Sampling interval	Mothers sampled	Sampling fraction
White smokers	5,520	2 per 23	477	8.6%
Minority smokers	3,116	1 per 6	516	16.6%
White non-smokers	50,693	1 per 65	775	1.5%
Black non-smokers	14,370	1 per 35	408	2.8%
Hispanic non-smokers	24,405	1 per 43	564	2.3%
Asian non-smokers	9,311	1 per 19	487	5.2%
All strata	107,415	1 per 33	3,227	3.0%

As indicated in Table 1, the number of all eligible births in 2003, and the fraction sampled, varied considerably by stratum. The actual proportion of interviews completed from the sample in each stratum also contributes to the composition of the final data file (see *Data Collection*, below). While the goal is to have roughly equal numbers of cases in each stratum for analysis, the final data file is weighted to allow statistical inferences that are representative of all mothers in the population (see *Weighting and Analysis*, below).

Table 2. NJ-PRAMS Production per Year

Year	Birth certificates sampled	Interviews completed	Weighted response rate
2002	1,397	952	71.7%
2003	3,227	2,152	71.4%
All years	4,624	3,104	

Questionnaire and Administration

The NJ-PRAMS questionnaire is built around the CDC-developed, mandatory core. Additional questions are contributed by the states that conduct PRAMS, and reflect individual state priorities. Core questions address maternal health behaviors and health care experiences immediately before, during and after the pregnancy. For example, there are items on smoking and vitamin use prior to pregnancy, educational and counseling services provided by health care providers throughout pregnancy, and breastfeeding after the newborn goes home. New Jersey's supplemental questions primarily provide further depth regarding smoking and cessation during pregnancy. (Current and past questionnaires are available from the NJ-PRAMS website, see *Further Information* below.)

Topics for PRAMS are chosen by CDC and collaborating states on a multiyear cycle. Questionnaire topics are meant to dovetail with current policy initiatives and evolving needs for research and evaluation. Most questions use a structured, multiple choice format to facilitate comparisons across states and over time. There are many opportunities, however, for women to report unusual circumstances not anticipated when questions were designed. All questions are exhaustively tested by CDC to ensure a high standard of reliability and validity.

In every state, PRAMS uses a *mixed-mode* methodology. Interviews are attempted first by mail, about two months after delivery, using mother's address from the birth certificate. If several reminders fail to yield a return by mail, the case is followed up by telephone. Each monthly batch of sampled mothers is active for about three months before further efforts stop. Both mail and phone interview phases were conducted by the Center for Public Interest Polling (CPIP) at Rutgers University. Each phase is supported by specialized survey management software provided by CDC.

Interviews may not be completed because a sampled mother could not be contacted, was unable to participate, or declined either actively or passively. CPIP used several methods to locate mothers who had moved or changed phone numbers. All mail and telephone materials were available in English and Spanish, but mothers limited to other languages could not be interviewed. In order to maximize cooperation, all sampled mothers were given a 60-minute prepaid phone card as an incentive.

The *survey response rate* is defined as the fraction of eligible sample cases for which complete interviews are obtained. Mothers remain eligible regardless of the reasons for *nonresponse*. In this survey it is appropriate to use a weighted rate that compares the returns in a stratified sample to what would be obtained in a proportional sample. In both 2002 and 2003, the weighted response rate was about 71.5%.

Weighting and Analysis

As noted above, weights must be used for a particular sample to represent the population of interest. Weights used in PRAMS adjust for the sample design and for differential nonresponse across strata. The first adjustment is straightforward—sampling weights are the inverse of the stratum sampling fractions. For example, since white nonsmokers were sampled at the lowest rate, 1:65, each respondent in that stratum receives the highest sampling weight—about 11 times that of each minority smoker respondent, who are sampled at the rate of 1:6.

Adjustment is also made for the overall level and systematic patterns of nonresponse. We first tested whether any important demographic variable available on the frame file was a significant predictor of response or nonresponse in any stratum. It is especially important that PRAMS adequately represent variations among mothers in education, age, marital status, number of prior children, child's birthweight and timeliness of prenatal care. For any stratum where these variables were significantly associated with nonresponse, we modified the sampling weights so that the disparate distributions came back into line with the population. *The weights used for 2003 interviews are preliminary until a final review by CDC staff.*

Analysis of weighted survey data requires special procedures. Estimates that do not incorporate weights will be biased relative to the population of interest. Furthermore, traditional measures of statistical precision and tests of significance will generally underestimate sampling error. It is not possible to report a single margin of error for the survey. NJ-PRAMS uses SUDAAN software for all interval estimates and statistical tests, as recommended by CDC.

Further Information

CDC PRAMS program website, including methodology, reports and resources:
www.cdc.gov/reproductivehealth/srv_prams.htm

PRAMS standard methodology summary:
www.cdc.gov/reproductivehealth/methodology.htm

New Jersey PRAMS website, including current questionnaire and reports:
www.state.nj.us/health/fhs/pramsindex.shtml